

2.0 CONTAINER STORAGE

The information provided in this section is submitted to address the applicable container storage requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC) § 270.15, and 20.4.1 NMAC, Subpart V, Part 264, Subpart I, revised June 14, 2000 [6-14-00]. This section presents general descriptions of the Technical Area (TA) 54 container storage units (CSU) and waste management practices. Detailed information on and figures of the CSUs at TA-54 and the waste management practices associated with them are provided in Attachment G of this permit renewal application. A summary of applicable regulatory references and the corresponding location where the requirement is addressed in this permit renewal application is located in Attachment G, Table G-1.

2.1 TA-54 CONTAINER STORAGE UNITS

TA-54 at Los Alamos National Laboratory (LANL) is presently used for storage of hazardous and mixed waste generated throughout LANL. At TA-54, containers are stored at Area L, Area G, and TA-54 West. There are two CSUs at Area L, nine CSUs at Area G, and two CSUs at TA-54 West. The following section provides brief descriptions of the CSUs and their capacities; the types of storage containers used; and the minimum aisle space for each CSU.

2.1.1 Area L

Area L is a 2.58-acre site located in the central portion of TA-54. The two CSUs at Area L are: 1) the aboveground CSU within the fence; and 2) the Storage Shafts CSU (Shafts 36 and 37). The Area L CSUs are surrounded by an 8-foot (ft) chain-link fence. The aboveground CSU within the fence includes the asphaltic concrete-covered area and the following structures: TA-54-31, TA-54-32, TA-54-35, TA-54-36, TA-54-39, TA-54-58, TA-54-68, TA-54-69, TA-54-70, TA-54-215, and TA-54-216. These structures provide waste containers with secondary containment and/or protection from the weather. The Area L CSUs are used for storage of hazardous waste and/or mixed low-level waste (MLLW) containers, which are subsequently transported to various off-site treatment, storage, and disposal facilities.

2.1.1.1 Area L CSUs and Capacities

The aboveground CSU within the fence at Area L has an overall storage capacity of 407,880 gallons, or the equivalent of 7,416 55-gallon drums. The aboveground CSU within the fence stores hazardous waste and MLLW in solid or liquid form (see Appendix B in the most recent version of

the “Los Alamos National Laboratory General Part B Permit Application,” hereinafter referred to as the LANL General Part B, for definitions of hazardous waste and MLLW). Waste containers are stored in the storage structures or on the asphaltic concrete-covered storage area at this aboveground CSU. The storage structures and the asphaltic concrete-covered area are shown on Figure 2-1. The maximum storage capacity and total storage area of the aboveground CSU at Area L are provided in Table 2-1. The volume of waste stored in the structures and on the asphaltic-concrete area comprising this CSU will not exceed the maximum storage capacity, which is based on the maximum storage configuration within the storage structures (see Figure 2-2). No medical, infectious, or explosive wastes are accepted at Area L. The Storage Shafts CSU stores solid MLLW (lead stringers). The location of this CSU is also shown on Figure 2-1. The maximum storage capacity of this CSU is 600 gallons.

General dimensions, containment features, and materials of construction for the two Area L CSUs are described in Attachment G of this permit renewal application to satisfy the requirements of 20.4.1 NMAC §270.15(a)(1) and (2) [6-14-00].

2.1.1.2 Storage Containers

Hazardous waste and MLLW at Area L are stored in containers that comply with the packaging requirements established by the U.S. Department of Transportation (DOT) in the Code of Federal Regulations (CFR), Title 49, Parts 171 through 180, and that are specific to the hazardous material which they contain. Specifications for the containers used for storage of hazardous waste and MLLW are listed in Table 2-2.

Waste containers stored at the aboveground CSU at Area L include 5-, 14-, 30-, 55-, 85-, and 110-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plywood (FRP) boxes; steel standard waste boxes (SWB); various steel boxes; metal overpack boxes; cardboard shipping containers; gas cylinders; roll-off bins; labpacks; and some oversized, custom metal and wooden containers. Detailed information on these containers is presented in Section 2.3 of this permit renewal application.

All waste containers (including gas cylinders at Canopy 216) are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers, baskets, in structures elevated by design) to prevent contact with accumulated liquids, which meets the requirements of 20.4.1 NMAC § 264.175(b)(2) [6-

14-00]. Information regarding the presence of free liquids in containers of hazardous waste and MLLW is obtained through generator waste-characterization knowledge, visual examinations, and/or the Paint Filter Liquids Test. Waste containers bearing free liquids are stored with secondary containment.

2.1.1.3 Minimum Aisle Space and Storage Configuration

Waste containers stored at Area L are placed in rows with a minimum aisle space of 24 inches. In addition, emergency egress aisles with a minimum aisle space of 24 inches are maintained at all personnel doors. At larger structures or locations, a main aisle down the center is maintained. Containers stored in these larger structures are typically placed in rows angled from the main aisle.

The storage configuration for the aboveground CSU at Area L is shown on Figure 2-2. The storage configuration shown on Figure 2-2 reflects the maximum storage inside the structures at Area L; however, storage operations are dynamic, and the storage configuration is subject to change based on daily operations. Storage is also conducted on the asphaltic concrete-covered area within the fence. At Area L, hazardous waste and MLLW containers are arranged in rows and stacked to a maximum of 10 ft high, based on the requirements in 49 CFR § 178.606(c), "Performance-Oriented Stack Test". Gas cylinders are stored in cylinder racks, baskets, or on specially constructed pallets that provide support and restraint.

2.1.2 Area G

Area G is located on 63 acres in the east-central portion of TA-54. It is surrounded by an 8-ft chain-link fence and includes nine CSUs that provide waste containers with secondary containment and/or protection from the weather. The nine CSUs at Area G include the following:

- Storage Domes 229, 230, 231, and 232, and Pad 9;
- TA-54-412, Storage Dome 226, and Pad 1;
- Storage Dome 48 and Pad 3;
- Pad 10 (former Pads 2 and 4) and transuranic waste characterization facilities;
- Storage Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041; and Pads 5, 8, and 7;
- Storage Domes 153 and 283, and Pad 6;
- Storage Shed 8;
- TA-54-33, and;

- Storage Dome 375 and Pad 11.

The Area G CSUs store hazardous waste, MLLW, and mixed transuranic waste (MTRUW) containers. The majority of the MTRUW is awaiting characterization and/or certification for shipment to the Waste Isolation Pilot Plant (WIPP).

2.1.2.1 Area G CSUs and Capacities

The Area G CSUs have an overall storage capacity of 4,506,590 gallons, or the equivalent of 81,938 55-gallon drums, and store hazardous waste and MLLW in solid or liquid form. MTRUW stored at Area G is essentially in solid form; however, waste containers with potential residual liquids are also stored at Area G. Waste containers are stored in structures or on associated asphaltic-concrete pads at the Area G CSUs. The storage structures and pads are shown on Figure 2-3. The maximum storage capacity and total storage area at each Area G CSU are provided in Table 2-3. The volume of waste stored in the structures and on the asphaltic-concrete pads comprising each CSU will not exceed the maximum storage capacity, which is based on the maximum storage configuration within the storage structures (see Figures 2-4 through 2-13). Figure 2-5 is provided to show examples of dome storage configurations based on waste container type (i.e., 55-gallon drums on metal pallets, FRP boxes, and SWBs).

General dimensions, containment features, and materials of construction for the Area G CSUs are described in Attachment G of this permit renewal application to satisfy the requirements of 20.4.1 NMAC § 270.15(a)(1) and (2) [6-14-00].

2.1.2.2 Storage Containers

Hazardous waste and MLLW stored at the Area G CSUs are stored in containers that comply with the packaging requirements established by the DOT in 49 CFR, Parts 171 through 180, and that are specific to the hazardous material which they contain. Specifications for the containers used for hazardous waste and MLLW at the Area G CSUs are listed in Table 2-2.

MTRUW is stored at the Area G CSUs in a variety of containers. The container types include any container used for storage of hazardous waste or MLLW listed in Table 2-2, and containers authorized for receipt at WIPP listed in Table 2-4. The types of waste containers used to store MTRUW at the Area G CSUs vary depending on whether the waste is newly-generated or legacy

(generated before October 1999). Newly-generated MTRUW containers include 55-gallon steel drums, 85-gallon steel drums used for overpacks, 71-inch x 54.25-inch x 37-inch SWBs, and metal overpacks for oversized waste. The types of waste containers used for legacy MTRUW include FRP boxes, 55-gallon steel drums, and overpacks.

Waste containers stored at the Area G CSUs include 5-, 14-, 30-, 55-, 85-, and 110-gallon steel, polyethylene, and fiber drums; FRP boxes; steel SWBs; various steel boxes; ten drum overpacks (TDOP); metal overpack boxes; roll-off bins; cardboard shipping containers; labpacks; gas cylinders; and some oversized, custom metal and wooden containers. Detailed information on these containers is presented in Section 2.3 of this permit renewal application.

All waste containers at the Area G CSUs are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers, in structures elevated by design) to prevent contact with accumulated liquids, which meets the requirements in 20.4.1 NMAC § 264.175(b)(2) [6-14-00]. Information regarding the presence of free liquids in containers of hazardous waste and MLLW is obtained through generator waste-characterization knowledge, visual examinations, real-time radiography (RTR), and/or the Paint Filter Liquids Test. MTRUW destined for storage at Area G must meet the following waste acceptance criteria for free liquids: 1) no more than two liters of liquid in a 55-gallon drum; 2) no more than eight liters of liquid in an SWB; and 3) no more than one inch of liquid in the bottom of any container. Waste generators are required to participate in a certification program that documents how the generators ensure that the above criteria are met. Compliance with this requirement is verified through RTR. Waste containers bearing free liquids are stored with secondary containment.

2.1.2.3 Minimum Aisle Space and Storage Configuration

Waste containers stored at the Area G CSUs are placed in rows with a minimum aisle space of 24 inches. In addition, emergency egress aisles with a minimum aisle space of 24 inches are maintained at all personnel doors. At larger structures or locations, a main aisle down the center is maintained. Containers stored in these larger structures are typically placed in rows angled from the main aisle.

The storage configurations for the CSUs at Area G are shown on Figures 2-4 through 2-13. These storage configurations reflect the maximum storage inside the structures at Area G; however, storage operations are dynamic and the storage configuration is subject to change based on daily

operations. Storage also occurs on the asphaltic-concrete pads. At Area G, hazardous waste containers are arranged in rows and stacked to a maximum of 10 ft high, based on the requirements in 49 CFR § 178.606(c), "Performance-Oriented Stack Test". Containers of MLLW and MTRUW (drums, FRP boxes, SWBs, and metal overpack boxes) are arranged in rows and stacked to a maximum of three high. For MLLW and MTRUW, the stacking limit is based on a criticality assessment, which shows that there is not a criticality concern for these containers in an infinite array stacked three high.

2.1.3 TA-54 West

TA-54 West is located on approximately two acres in the northwest corner of TA-54. It is surrounded by an 8-ft chain-link fence. TA-54 West contains the Radioassay and Nondestructive Testing (RANT) Facility and is used to receive, stage, and assemble payload containers of TRU waste and MTRUW. These payload containers are placed in Transuranic Package Transporter-II (TRUPACT-II) shipping containers for shipment to WIPP. TA-54 West is also used to store hazardous waste, MLLW, and MTRUW containers. The two CSUs at the RANT Facility at TA-54 West are: 1) the Indoor CSU; and 2) the Outdoor CSU. Storage and staging will occur at any location within the two CSUs at TA-54 West.

2.1.3.1 TA-54 West CSUs and Capacities

The two CSUs at TA-54 West have an overall storage capacity of 11,660 gallons, or the equivalent of 212 55-gallon drums, and store only MLLW and MTRUW in solid form. Waste containers are stored in either the Indoor CSU or the Outdoor CSU at TA-54 West. The CSUs are shown on Figure 2-14. The maximum storage capacity and total storage area at the TA-54 West CSUs are provided in Table 2-5. The volume of waste stored in the structure and on the asphaltic-concrete pad comprising the CSUs will not exceed the maximum storage capacity.

General dimensions, containment features, and materials of construction for the TA-54 West CSUs are described in Attachment G of this permit renewal application to satisfy the requirements of 20.4.1 NMAC § 270.15(a)(1) and (2) [6-14-00].

2.1.3.2 Storage Containers

MLLW stored at the TA-54 West CSUs is stored in containers that comply with the packaging requirements established by the DOT in 49 CFR, Parts 171 through 180, and that are specific to the

hazardous material which they contain. Specifications for the containers used for storage of MLLW at the TA-54 West CSUs are listed in Table 2-2.

MTRUW is stored at the TA-54 West CSUs in a variety of containers. The container types include any container used for storage of MLLW listed in Table 2-2, and containers authorized for receipt at WIPP listed in Table 2-4. The types of waste containers used to store MTRUW at the TA-54 West CSUs vary depending on whether the waste is newly-generated or legacy (generated before October 1999). Newly-generated MTRUW containers include 55-gallon steel drums, 85-gallon steel drums used for overpacks, 71-inch x 54.25-inch x 37-inch SWBs, and metal overpacks for oversized waste. The types of waste containers used for legacy MTRUW include FRP boxes, 55-gallon steel drums, and overpacks.

Waste containers stored at the TA-54 West CSUs include 30-, 55-, 85-, and 110-gallon steel, polyethylene, and fiber drums; steel SWBs; various steel boxes; TDOPs; metal overpack boxes; TRUPACT-II containers; and some oversized custom metal and wooden containers. Detailed information on these containers is presented in Section 2.3 of this permit renewal application.

All waste containers at the TA-54 West CSUs are stored in areas with sloped floors and sumps, on pallets, or are otherwise elevated (e.g., on dollies) to prevent contact with accumulated liquids. Information regarding the presence of free liquids in containers of MLLW is obtained through generator waste-characterization knowledge, visual examinations, and/or the Paint Filter Liquids Test. MTRUW is characterized to verify the absence of free liquids using RTR. Containers at the TA-54 West CSUs found to contain liquids are placed on self-containment pallets and returned to one of the Area G CSUs. These measures meet the requirements of 20.4.1 NMAC § 264.175(b)(2) [6-14-00].

2.1.3.3 Minimum Aisle Space and Storage Configuration

Waste containers stored at the TA-54 West CSUs may be placed in rows with a minimum aisle space of 24 inches. A main aisle may be maintained down the center of a storage location, as needed. In addition, emergency egress aisles with a minimum aisle space of 24 inches are maintained at all personnel doors.

The storage configurations for the CSUs at TA-54 West are shown on Figure 2-15. These storage configurations reflect the existing storage capacity at the TA-54 West CSUs; however, storage

operations are dynamic and the storage configuration is subject to change based on daily operations. Wastes contained in 55- or 85-gallon and/or other DOT-approved drums are typically stored on pallets. Prepared payloads for TRUPACT-II shipping containers consist of two 7-packs of drums or two SWBs. Each pallet of seven drums is wrapped in multiple layers of plastic, and another seven drums are wrapped on a pallet and stacked above. The entire 14-drum package is wrapped again. Prepared payloads of SWBs are stacked two high; the SWBs are ratchet-strapped together. Other containers are not stacked at the TA-54 West CSU.

2.2 AUTHORIZED WASTE IDENTIFICATION

The TA-54 hazardous and mixed waste CSUs store containers that bear hazardous constituents or hazardous wastes with the U.S. Environmental Protection Agency Hazardous Waste Numbers presented in the most recent version of the "Los Alamos National Laboratory General Part A Permit Application."

2.3 TYPES AND CONDITION OF CONTAINERS [20.4.1 NMAC § 264.171]

Containers must be in good condition, without severe rust, dents, deep scratches, bulges, or other structural defects. Any waste container that is not in good condition (e.g., severe rusting, apparent structural defects) is overpacked or the waste is repackaged in a container in good condition and compatible with the waste, packaging material, and/or other container. In addition, the overpack container and/or new container must be resistant to environmental conditions. This meets the requirements of 20.4.1 NMAC § 264.171 [6-14-00]. The following describes storage containers considered acceptable for waste storage at the TA-54 CSUs. Tables 2-2 and 2-4 provide additional information on storage containers.

The most common container used for waste storage at TA-54 is the 55-gallon drum. Standard 55-gallon drums have a gross internal volume of 7.24 cubic ft (ft³). The standard drum is constructed of mild steel, has an inner diameter of approximately 22 inches, and a usable inside height of approximately 33 inches. These drums may also contain rigid, molded polyethylene or other compatible material liners. These liners are procured to a DOT specification describing the functional requirements of fitting inside the drum, material thickness and tolerances, and quality controls and required testing. Another type of drum commonly used at TA-54 is the polyethylene drum. Constructed of high-density polyethylene, these drums come in various sizes and dimensions. Capacities range from 5 gallons to 55 gallons. Types of closure mechanisms include screw-type bungs (for closed-head containers), lever-lock releases, snap-on lids, and screw-on lids.

Eighty-five-gallon drum overpacks are used for overpacking 55-gallon drums and have a gross internal volume of 11.3 ft³. They are also used for collecting and storing derived waste.

Standard-size FRP boxes measure 4 ft by 4 ft by 8 ft, for a total volume of 128 ft³. The outer surface of FRP boxes is coated with a layer of epoxy-impregnated fiberglass. Nonstandard-size containers, including FRP boxes, are designed and constructed to contain irregular-shaped and/or oversized waste. Various types of metal boxes are used for storage. One type, the SWB, is constructed of steel and has rounded ends. It has welds on all four sides and the bottom and has a lid gasket. After waste is placed into the container, the lid is either bolted on or clamped down and welded. General dimensions include an inside height of 36.75 inches, an inner length of 68.75 inches, and an inside width of 51.875 inches, for a gross internal volume of 66.3 ft³. A second type of metal box is also constructed of steel, but is rectangular in shape. It has welds on all four sides and the bottom, and a lid that is clamped in place and then welded. Other metal boxes (including overpacks) vary in size and typically have welds both inside and outside on all four sides and on the bottom. The metal overpack boxes are elevated by design or on pallets for ease in handling. Steel overpack boxes are constructed of welded carbon steel and are elevated by design. Metal boxes typically have lid gaskets with bolt-on, clip-pinned, or hinged lids. Custom metal and wooden boxes are constructed for oversized and/or unique wastes. Other fiber boxes are also used, as appropriate.

Gas cylinders must meet the specific criteria identified in 49 CFR Part 178, Subpart C, to be accepted for transport. The cylinders must not have welded seams, must have the appropriate valves, and must be DOT-approved for the contained material. The cylinders range in size from lecture bottles (2 inches in diameter and 12 inches tall) to large standing cylinders (9 to 12 inches in diameter and up to 58 inches tall). Cylinders containing compressed gases are stored in cylinder racks, baskets, or drums. Small gas cylinders or metal receptacles with DOT Specification 2P, 2Q, 3E, 3HT, 4BA spherical type, 4D, 4DA, or 4DS are packaged in strong outside packaging drums or crates.

Roll-off bins are larger boxes designed for bulk solid waste streams (e.g., soils) that can be rolled on and off of a transport vehicle. The bins are constructed of heavy gauge steel with capacities ranging from 7 cubic yards (yd³) to 40 yd³. Bin lids have several designs (e.g., roll-top, hydraulic); various types of lids are currently used. The roll-top type has two halves that can be rolled back

manually to expose either side of the bin. The hydraulic type is hinged in the middle, allowing the lid to fold up and be pulled hydraulically to one side (to allow for loading).

The use of overpacks is one option when a container's integrity is suspect. Eighty-five-gallon drums are commonly used to overpack 55-gallon drums, and 110-gallon drums are used to overpack 85-gallon drums. Rounded-end SWBs are used to overpack drums of various sizes. Another type of overpack that may be used at TA-54 is the TDOP, which consists of a steel-welded cylindrical body and typically has a gasket with a bolt-on lid. TDOPs are approximately 6 ft tall and 6 ft in diameter. They can be used to overpack up to 10 standard 55-gallon drums or one SWB. TDOPs are certified to be noncombustible. Metal boxes are generally used when overpacking FRP boxes. TRUPACT-II shipping packages are used at TA-54 West to store TRU and mixed TRU waste containers prior to shipment to WIPP. This double containment, stainless-steel shipping package can hold 14 drums, a TDOP, or up to 2 rounded-end SWBs. Additional information on container specifications is provided in Tables 2-2 and 2-4.

Waste Operating Technicians visibly inspect all incoming drums for evidence (e.g., corrosion, visible staining, bulges, ruptures, dents, leaks) that may indicate surface contamination. Visual inspections of containers are conducted at the time of waste pickup at the generator's site, at the time of receipt at TA-54, and during weekly inspections. A visual inspection of a container's overall condition is also conducted when the waste container is shipped off site. If any evidence of surface contamination is detected, the waste container is either overpacked in an appropriate container or the waste is repackaged in a new container.

MTRUW containers are vented with one or more filters. The filter vents on the containers, including overpacks, meet the specifications described in Appendix 2.5 of the TRUPACT-II Authorized Methods for Payload Control (Westinghouse, 2000). The containers are vented to allow any gases that are generated by radiolytic and microbial processes within a waste container to escape, thereby preventing over-pressurization within the container. The high-efficiency particulate air grade vent filters prevent the escape of any radioactive particulates.

2.4 COMPATIBILITY OF WASTE WITH CONTAINERS [20.4.1 NMAC § 264.172]

The TA-54 CSUs will only store containers made of or lined with materials that will not react with and are otherwise compatible with the waste stored in them. All wastes transported to the TA-54 CSUs must be packaged in full compliance with DOT requirements. DOT packaging requirements

are based on the Packing Group of the material, its vapor pressure, and the chemical compatibility between the package and the hazardous material. The DOT specifications and United Nations standards that identify any additional packaging requirements that must also be met (such as chemical compatibility) are presented in Tables 2-2 and 2-4. This fulfills the requirements of 20.4.1 NMAC § 264.172 [6-14-00].

2.5 MANAGEMENT OF CONTAINERS [20.4.1 NMAC § 264.173(a)(b)]

Waste containers stored at the TA-54 CSUs are handled in a manner that will not cause them to rupture or leak, as required in 20.4.1 NMAC § 264.173(b) [6-14-00].

All containers stored at the TA-54 Area L and Area G CSUs are kept closed during storage in accordance with 20.4.1 NMAC § 264.173(a) [6-14-00], except when waste is added to or removed from containers; when the containers are opened for visual examination, sampling, or other characterization activities; or when the contents need to be repackaged. At TA-54-412, waste containers are opened during waste segregation, volume reduction, sample collection, repackaging, coring, visual examination, and/or decontamination. Waste containers are opened within a work enclosure that provides confinement, preventing any release of waste constituents. With the exception of TRUPACT-II shipping containers, all waste containers stored at the TA-54 West CSUs are kept closed during storage in accordance with 20.4.1 NMAC § 264.173(a) [6-14-00].

When waste is transported within or between CSUs at Areas L and G and TA-54 West, the waste containers are segregated, loaded, and secured on a transport vehicle following the appropriate safety practices. When transporting waste between Area G and TA-54 West, the west entrance of the TA-54 facility is blocked while the transport vehicle travels between the two areas, thus denying access by other vehicles and personnel. Examples of transport vehicles used for inter-site waste transport include stake bed trucks, forklifts, and cranes.

2.6 CONTAINMENT SYSTEMS [20.4.1 NMAC §§ 264.175(b)(3) and (5); 20.4.1 NMAC §§ 270.15(a)(3) and (5)]

Liquid that might accumulate at the TA-54 CSUs is contained within a secondary containment system (e.g., sump, berms, or secondary containment pallet) at each storage location or structure until the liquid is removed. All secondary containment systems are designed to contain at least 10% of the volume of potential liquid-bearing waste containers or the volume of the largest container, whichever is greater, pursuant to the requirements of 20.4.1 NMAC § 264.175(b)(3) [6-

14-00] (see Supplement 2-1). Any accumulated liquids are removed in as timely a manner as is necessary to prevent overflow of the collection system, pursuant to 20.4.1 NMAC § 264.175(b)(5). Any accumulated liquids are removed with a vacuum truck, a high-efficiency particulate air vacuum, a portable pump, or by other means, as appropriate and depending on the waste type and volume. The collected liquids are then transferred to appropriate containers and characterized. If the accumulated liquids are from an identified source or from precipitation, snowmelt, or water generated during fire-suppression activities, the resulting material will be characterized as a newly-generated waste using acceptable knowledge or will be analyzed, as applicable, for the hazardous waste constituents known to be components of the source. If the accumulated liquids are from an unidentified source, the resulting material will be analyzed for the appropriate potential parameters listed in Table E-3 of Appendix E in the LANL General Part B. Containers of collected liquids are stored with secondary containment, pending analytical results that determine how the liquids will be managed. This method of removal and analysis of accumulated liquids fulfills the requirements of 20.4.1 NMAC § 270.15(a)(5) [6-14-00], for prevention of overflow.

2.7 INSPECTION SCHEDULES AND PROCEDURES [20.4.1 NMAC § 264.174]

The purpose of CSU inspections is to identify leaking containers, deterioration of containers, and loss of integrity of a containment system, as required by 20.4.1 NMAC § 264.174 [6-14-00]. The inspections include checking the structural integrity of the containers (e.g., for bulging or warping) and the secondary containment structures for integrity and the presence of accumulated liquids. Inspections will follow the Inspection Plan in Appendix C of the LANL General Part B and in Attachment C of this permit renewal application.

2.8 SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE [20.4.1 NMAC §§ 264.17(a) and (b), 264.176, and 264.177(a),(b), and (c); 20.4.1 NMAC §§ 270.14(b)(9) and 270.15(d)]

Containers holding ignitable or reactive wastes are located at least 50 ft from the facility's property line at all times (see Figures 2-1, 2-3, and 2-14) and are protected from sources of ignition or reaction. The distance to the nearest facility boundary is approximately 780 feet. Waste management practices at the TA-54 CSUs minimize the possibility of accidental ignition. There are no sources of open flames allowed at the CSUs. Cutting and welding activities are never conducted in the vicinity of waste containers. Ignitable and reactive wastes are segregated and separated by distance to minimize the possibility of spontaneous ignition and can be stored inside structures at the CSUs to minimize exposure to hot surfaces and radiant heat. Only non-sparking tools are used in handling waste containers, and lightning rods are located on storage structures.

Smoking is not allowed in any of the CSUs. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by 20.4.1 NMAC § 264.17(a) [6-14-00]. Precautions taken to prevent reactions that may generate extreme heat or pressure, fire or explosions, or violent reactions and to prevent reactions that may damage the structural integrity of the CSU include segregating and separating (by distance) ignitable and reactive wastes stored in the structures. Precautions taken to prevent reactions that may produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment, or produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions include keeping containers closed during storage and venting containers of MTRUW. Together, these measures meet the requirements of 20.4.1 NMAC §§ 264.17(a) and (b) and 264.176 [6-10-00].

Incompatible wastes are segregated and separated during storage in accordance with 20.4.1 NMAC § 264.177(c) [6-14-00]. All waste is segregated and stored in accordance with DOT compatibility groups. These DOT compatibility groups are: flammables (Class 3), oxidizers (Class 5.1), combustible and noncombustible miscellaneous hazardous material (Class 9), corrosives (Class 8), poisons (Class 6), radioactive (Class 7), acids (Class 8), reactives (Class 4), and non-regulated materials. Incompatible wastes are separated and segregated from other wastes and materials by means of a berm, dike, wall, or other specific means (e.g., secondary containment pallets, modular sheds, distance). In addition, no incompatible wastes will be mixed, and no waste will be placed in a container that previously held an incompatible waste, as required by 20.4.1 NMAC §§ 264.177(a) and (b), and 20.4.1 NMAC § 270.15(d) [6-14-00].

2.9 CLOSURE [20.4.1 NMAC §§ 264.111 and 264.178]

Partial closure activities at the TA-54 CSUs will include removal of hazardous and/or mixed waste from the CSU to be closed and decontamination or removal of structures and equipment that have been contaminated by waste materials. Closure will minimize the need for further maintenance, preclude the release of hazardous waste or constituents to environmental media, and be protective of human health. A consolidated closure plan for the TA-54 CSUs is presented in Attachment F of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC §§ 264.111 and 264.178 [6-14-00]. The consolidated closure plan meets the applicable requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart G.

2.10 CONTROL OF RUN-ON AND RUNOFF [20.4.1 NMAC § 264.175(b)(4); 20.4.1 NMAC § 270.14(b)(8)(ii)]

At TA-54, controlling run-on and runoff at the locations where waste management operations regularly occur is accomplished by appropriate contouring of surface areas and the use of control structures such as drainage channels, berms, and culverts. Canopies, dome structures, and other buildings are used to eliminate or minimize contact between run-on and waste containers. In addition, all stored waste containers are elevated or are placed in areas with sloped floors and sumps to provide protection from liquids that could be introduced through fire-suppression activities. Run-on/runoff management methods specific to the Area L, Area G, and TA-54 West CSUs are discussed below. This information is provided to meet the requirements of 20.4.1 NMAC § 264.175(b)(4), and 20.4.1 NMAC § 270.14(b)(8)(ii) [6-14-00].

2.10.1 Area L

The Area L CSUs rely on structural and operational controls that are designed to divert storm water to a single outfall. They include asphaltic-concrete channels, a 12-inch corrugated pipe storm drain to convey storm water to a single outfall at the northeast corner of Area L, and a contoured paved surface to direct storm water to the conveyances. Drainage control features at Area L are shown on Figure 2-1; these features are subject to change. Operational controls include inspecting run-on and runoff controls (see Item 16 on Figure C-1 [and instructions] in Appendix C of the General Part B) and maintaining the structural run-on/runoff controls, as necessary. Snow removal is also performed to minimize run-on and runoff.

2.10.2 Area G

In certain drainage areas at Area G, structures have been provided to efficiently channel storm water to the ephemeral streams draining the mesa. These structures include asphaltic-concrete and concrete drainage channels, a weir, riprap-lined channels, a retention dam, berms, and culverts. Roads and drive pads are configured, by grading and paving, to carry storm water away from the areas of active vehicular and loading operations. Silt fences and other erosion control structures are established throughout the drainage areas in locations prone to erosion or affected by heavy runoff during storm events. Drainage control features at Area G are shown on Figure 2-3; these features are subject to change.

2.10.3 TA-54 West

The foundation at the RANT Facility (TA-54-38) is above grade to prevent run-on of storm water. Storm drains and trenches are included in the building design to collect any precipitation or snowmelt that may enter the facility through the loading bays. The Outdoor CSU storage pad is sloped away from the RANT Facility building towards the edges of the pad, allowing storm water to flow to the edges of the pad. All containers of waste stored at the TA-54 West CSUs are located in areas with sloped floors and sumps or are elevated by design, on dollies, or on pallets. This prevents the containers from coming into contact with liquids. All waste-containing drums and SWBs on the Outdoor CSU storage pad are covered by a canopy or tarp to prevent contact with precipitation. Loaded TRUPACT-II containers may also be stored on the Outdoor CSU storage pad until shipment to WIPP occurs. TRUPACT-II containers are leak-resistant containers with an acceptable leak rate of 2.6×10^{-7} cubic centimeters of helium per second, which prevents the containerized waste within the TRUPACT-II containers from contact with precipitation. Positive surface drainage throughout TA-54 West directs potential run-on away from the TA-54 West CSUs. A drainage swale and curbing direct storm water runoff toward an outfall on the northeast side of the storage pad. Drainage control features at TA-54 West are shown on Figure 2-14; these features are subject to change.

Table 2-1
Maximum Storage Capacity and Total Storage Area at the Area L Container Storage Units

Container Storage Unit (CSU)	Storage Structure	Structure Maximum Storage Capacity	CSU Total Maximum Storage Capacity	Structure Storage Area (Square Feet)	CSU Total Storage Area (Square Feet)
Aboveground CSU Within the Fenced Area	TA-54-31	1,320 gallons (24 55-gallon drum equivalents [DE])	407,880 gallons	179	28,913
	TA-54-32	17,160 gallons (312 55-gallon DE)		1,806	
	TA-54-35	15,840 gallons (288 55-gallon DE)		1,056	
	TA-54-36	13,200 gallons (240 55-gallon DE)		1,056	
	TA-54-39	40,920 gallons (744 55-gallon DE)		3,456	
	TA-54-58	15,840 gallons (288 55-gallon DE)		1,056	
	TA-54-68	1,760 gallons (32 55-gallon DE)		128	
	TA-54-69	1,760 gallons (32 55-gallon DE)		128	
	TA-54-70	1,760 gallons (32 55-gallon DE)		128	
	TA-54-215	261,360 gallons (4,752 55-gallon DE)		15,960	
	TA-54-216	36,960 gallons (672 55-gallon DE)		3,960	
Storage Shafts CSU (Shafts 36 & 37)	TA-54-36	300 gallons	600 gallons	4.9	9.8
	TA-54-37	300 gallons		4.9	

Table 2-2
Storage Containers Used for Hazardous and Mixed Low-Level Waste

Non-Bulk Performance-Oriented Packaging for Which the Manufacturer has Provided the Required UN Marking in Accordance with 49 CFR § 178.503	Intermediate Bulk Performance-Oriented Containers for Which the Container has been Marked by the Manufacturer in Accordance with 49 CFR § 178.703	Cylinders for Which the Cylinder has been Properly Marked with the Applicable DOT Specification Number in Accordance with 49 CFR § 178.35	Containers Used for Transport of Radioactive Materials
Steel drums meeting the standards of 49 CFR § 178.504. Maximum capacity will not exceed 119 gallons (gal); maximum net mass will not exceed 882 pounds (lbs). If materials used for body, heads, closures, and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments must be applied. These coatings or treatments must retain their protective properties under normal conditions of transport.	Metal intermediate bulk containers meeting the standards of 49 CFR § 178.705.	Seamless steel cylinders meeting the requirements of DOT Specification 3A, 3AX, 3AA, 3AAX, 3B, 3E, or 3T in 49 CFR, Part 178, Subpart C.	Containers meeting the requirements of DOT Specification 7A in 49 CFR § 178.350.
Aluminum drums meeting the standards of 49 CFR § 178.505. Maximum capacity will not exceed 119 gal; maximum net mass will not exceed 882 lbs.	Rigid plastic intermediate bulk containers meeting the standards of 49 CFR § 178.706.	Welded or brazed steel cylinders meeting the requirements of DOT Specification 4B, 4BA, 4B240ET, 4AA480, 4L, or 4BW in 49 CFR, Part 178, Subpart C.	Containers meeting the requirement of Industrial Packaging IP-1, IP-2, or IP-3 in 49 CFR § 173.411.
Metal drums other than steel or aluminum meeting the standards of 49 CFR § 178.506. Maximum capacity will not exceed 119 gal; maximum net mass will not exceed 882 lbs.	Composite intermediate bulk containers meeting the standards of 49 CFR § 178.707.	Seamless or welded aluminum cylinders meeting the requirements of DOT Specification 3AL or 4E in 49 CFR, Part 178, Subpart C.	Containers meeting the requirements of excepted packaging and the requirements of 49 CFR § 173.410.

Table 2-2 (continued)
Storage Containers Used for Hazardous and Mixed Low-Level Waste

Non-Bulk Performance-Oriented Packaging for Which the Manufacturer has Provided the Required UN Marking in Accordance with 49 CFR § 178.503	Intermediate Bulk Performance-Oriented Containers for Which the Container has been Marked by the Manufacturer in Accordance with 49 CFR § 178.703	Cylinders for Which the Cylinder has been Properly Marked with the Applicable DOT Specification Number in Accordance with 49 CFR § 178.35	Containers Used for Transport of Radioactive Materials
Fiber drums meeting the standards of 49 CFR § 178.508. Maximum capacity will not exceed 119 gal; maximum net mass will not exceed 882 lbs.	Fiberboard intermediate bulk containers meeting the standards of 49 CFR § 178.708. The strength of the material used and the construction of the liner must be appropriate to the capacity and intended use of the container. Joints and closures must be sift-proof and capable of withstanding pressures and impacts liable to occur under normal conditions of handling and transport. Joints must be made with appropriate overlap and if metal staples are used for fastening, they must pass completely through all pieces and be formed or protected so that any inner liner cannot be abraded or punctured by them.	Seamless nickel cylinders meeting the requirements of DOT Specification 3BN in 49 CFR, Part 178, Subpart C.	
Plastic drums meeting the standards of 49 CFR § 178.509. Maximum capacity will not exceed 119 gal; maximum net mass will not exceed 882 lbs.	Wooden intermediate bulk containers meeting the standards of 49 CFR § 178.709. The strength of the material used and the construction of the liner must be appropriate to the capacity and intended use of the container. Joints and closures must be sift-proof and capable of withstanding pressures and impacts liable to occur under normal conditions of handling and transport.		

Table 2-2 (continued)
Storage Containers Used for Hazardous and Mixed Low-Level Waste

Non-Bulk Performance-Oriented Packaging for Which the Manufacturer has Provided the Required UN Marking in Accordance with 49 CFR § 178.503	Intermediate Bulk Performance-Oriented Containers for Which the Container has been Marked by the Manufacturer in Accordance with 49 CFR § 178.703	Cylinders for Which the Cylinder has been Properly Marked with the Applicable DOT Specification Number in Accordance with 49 CFR § 178.35	Containers Used for Transport of Radioactive Materials
Plastic Jerricans meeting the standards of 49 CFR § 178.509. Maximum capacity will not exceed 16 gal; maximum net mass will not exceed 265 lbs.	Flexible intermediate bulk containers meeting the standards of 49 CFR § 178.710. Flexible intermediate bulk containers are intended to contain solid hazardous materials. The types with liners or coatings are designated: 13H2, woven plastic, coated; 13H3, woven plastic with liner; 13H4, woven plastic, coated with liner; 13L2, textile, coated; 13L3, textile with liner; and 13L4 textile, coated with liner.		
Steel or aluminum boxes meeting the standards of 49 CFR § 178.512. Maximum net mass will not exceed 882 lbs. Boxes must be lined with fiberboard or felt packing pieces or must have an inner liner or coating of suitable material in accordance with 49 CFR 173 Subpart C. If a double seamed metal liner is used, steps must be taken to prevent the ingress of materials, particularly explosives, into the recesses of the seams.			

Table 2-2 (continued)
Storage Containers Used for Hazardous and Mixed Low-Level Waste

Non-Bulk Performance-Oriented Packaging for Which the Manufacturer has Provided the Required UN Marking in Accordance with 49 CFR § 178.503	Intermediate Bulk Performance-Oriented Containers for Which the Container has been Marked by the Manufacturer in Accordance with 49 CFR § 178.703	Cylinders for Which the Cylinder has been Properly Marked with the Applicable DOT Specification Number in Accordance with 49 CFR § 178.35	Containers Used for Transport of Radioactive Materials
Aluminum or steel Jerricans meeting the standards of 49 CFR 178.511. Maximum capacity will not exceed 16 gal; maximum net mass will not exceed 265 lbs.). If materials used for body, heads, closures, and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments must be applied. These coatings or treatments must retain their protective properties under normal conditions of transport.			
Plywood boxes meeting the standards of 49 CFR § 178.514. Maximum net mass will not exceed 882 lbs.			
Fiberboard boxes meeting the standards of 49 CFR § 178.516. Maximum net mass will not exceed 882 lbs.			
Composite packaging with inner receptacles meeting the standards of 49 CFR § 178.522. Maximum capacity is 66 gal; maximum net mass is 882 lbs.			
Composite packaging with inner glass, porcelain, or stone receptacles meeting the standards of 49 CFR § 178.523. Maximum net capacity for liquids is 16 gal; maximum net mass for solids is 165 lbs.			

Table 2-2 (continued)
Storage Containers Used for Hazardous and Mixed Low-Level Waste

Table 2-3
Maximum Storage Capacity and Total Storage Area at the Area G Container Storage Units

Container Storage Unit (CSU)	Storage Structure/Pad	Structure/Pad Maximum Storage Capacity	CSU Total Maximum Storage Capacity	CSU Total Storage Area (Square Feet)
Storage Shed 8	TA-54-8	11,880 gallons (gal.) (216 55-gal. drum equivalents [DE])	11,880 gal.	698
TA-54-33	TA-54-33	108,240 gal. (1,968 55-gal. DE)	108,240 gal.	5,000
Storage Dome 48 and Pad 3	TA-54-48 and Pad 3	213,840 gal. (3,888 55-gal. DE)	213,840 gal.	19,250
Storage Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041; and Pads 5, 8, and 7	TA-54-49 and Pad 5	520,080 gal. (9,456 55-gal. DE)	623,480 gal.	59,933
	TA-54-224 and Pad 8	95,040 gal. (1,728 55-gal. DE)		
	TA-54-144, TA-54-145, TA-54-146, TA-54-177	1,320 gal. (24 55-gal. DE) [330 gal./shed; 6 55-gal. DE/shed]		
	TA-54-1027, TA-54-1028, TA-54-1030, TA-54-1041, and Pad 7	7,040 gal. (128 55-gal. DE) [1,760 gal./shed; 32 55-gal. DE/shed]		
Storage Domes 153 and 283 and Pad 6	TA-54-153 and Pad 6	316,140 gal. (5,748 55-gal. DE)	597,300 gal.	68,310
	TA-54-283 and Pad 6	281,160 gal. (5,112 55-gal. DE)		
TA-54-412, Storage Dome 226, and Pad 1	TA-54-412 and Pad 1	91,080 gal. (1,656 55-gal. DE)	502,920 gal.	13,180
	TA-54-226 and Pad 1	411,840 gal. (7,488 55-gal. DE)		22,250
Storage Domes 229, 230, 231, and 232, and Pad 9	TA-54-229 and Pad 9	330,000 gal. (6,000 55-gal. DE)	1,446,720 gal.	158,460
	TA-54-230 and Pad 9	330,000 gal. (6,000 55-gal. DE)		
	TA-54-231 and Pad 9	393,360 gal. (7,152 55-gal. DE)		
	TA-54-232 and Pad 9	393,360 gal. (7,152 55-gal. DE)		
Storage Dome 375 and Pad 11	TA-54-375 and Pad 11	682,440 gal. (12,408 55-gal. DE)	682,440 gal.	30,000
Pad 10 (former Pads 2 and 4) and transuranic waste characterization facilities	Pad 10 (former Pads 2 and 4)	313,830 gal. (5,706 55-gal. DE)	319,770 gal.	120,122
	Transuranic Waste Characterization Facilities	5,940 gal. (108 55-gal. DE)		

Table 2-4

Storage Containers Used at the Area G Container Storage Units for Mixed Transuranic Waste Awaiting Processing, Characterization, and Transport to the Waste Isolation Pilot Plant (WIPP) and Authorized for Receipt at WIPP

Standard 55-gallon (208-liter) Drum	Standard Waste Box	Standard 85-gallon (322-liter) Drum Overpack
Gross internal volume of 7.3 cubic feet (ft ³) (0.21 cubic meters [m ³]) constructed of mild steel. May also contain ridge, molded polyethylene (or other compatible material) liner. Must meet requirements of DOT Specification 7A in 49 CFR § 178.350.	Gross internal volume of 66 ft ³ (1.88 m ³). Must meet requirements of DOT Specification 7A in 49 CFR § 178.350.	Gross internal volume of 11.3 ft ³ (0.32 m ³). Used for overpacking contaminated 55-gallon drums containing mixed transuranic (TRU) waste.
One or more filter vents installed on top of the container. Vents are high-efficiency particulate air (HEPA) grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 millimeters [mm]) in diameter through which internally generated gas may pass. Filter media can be any material (e.g., composite carbon, sintered metal).	One or more filter vents installed on top of the container. Vents are HEPA-grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 mm) in diameter through which internally generated gas may pass. Filter media can be any material (e.g., composite carbon, sintered metal).	One or more filter vents installed on top of the container. Vents are HEPA-grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 mm) in diameter through which internally generated gas may pass. Filter media can be any material (e.g., composite carbon, sintered metal).

Table 2-4 (continued)

Storage Containers Used at the Area G Container Storage Units for Mixed Transuranic Waste Awaiting Processing, Characterization, and Transport to the Waste Isolation Pilot Plant (WIPP) and Authorized for Receipt at WIPP

Ten-Drum Overpack (TDOP)	Staging Containers
The ten-drum overpack is a metal container (similar to the SWB) that meets DOT specification 7A and is certified to meet all applicable requirements for Type A packaging. The TDOP is a welded-steel, right circular cylinder, approximately 74 inches high and 71 inches in diameter. The maximum loaded weight is 6,700 pounds. A bolted lid on one end is removable; sealing is accomplished by clamping a neoprene gasket between the lid and the body. A TDOP may contain up to 10 standard 55-gallon drums or one SWB.	As a result of facility modifications over the years, a large amount of equipment and other materials have been removed from TRU operations throughout the Laboratory. This equipment is currently staged in Area G for eventual processing through the Decontamination and Volume Reduction System Facility. After processing, the waste will be placed into authorized WIPP containers for characterization and transport to WIPP. The staging containers are custom designed containers made to specifically hold the contents for which they were made. The containers are constructed of fiberglass-reinforced plywood or metal. A number of these containers are made of raw plywood and are overpacked in metal containers. The size and weight of these containers vary depending on their contents; however, all containers meet the requirements of 49 CFR 173.410.
One or more filter vents installed on top of the container. Vents are HEPA-grade filters to preclude container pressurization caused by gas generation and to prevent particulate material from escaping. Vents have an orifice approximately 0.375 inches (9.53 mm) in diameter through which internally generated gas may pass. Filter media can be any material (e.g., composite carbon, sintered metal).	

Table 2-5
Storage Capacity and Total Storage Area at the TA-54 West Container Storage Units

Container Storage Unit (CSU)	Storage Structure/Pad	Structure/Pad Storage Capacity	CSU Total Storage Capacity	Structure/Pad Storage Area (Square Feet)	CSU Total Storage Area (Square Feet)
Indoor CSU	TA-54-38, Low Bay	880 gallons (16 55-gallon drum equivalents)	3,080 gallons	1,330	4,056
	TA-54-38, High Bay	2,200 gallons (40 55-gallon drum equivalents)		2,726	
Outdoor CSU	TA-54-38, Pad	7,920 gallons (144 55-gallon drum equivalents)	8,580 gallons	37,248	37,864
	TA-54-38, Loading Dock	660 gallons (12 55-gallon drum equivalents)		616	